(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 370 591 A3**

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number: **89250092.7**

(22) Date of filing: **20.11.89**

(51) Int. Cl.[5]: **E21B 23/00**, E21B 23/04, E21B 29/02, E21B 17/10

(30) Priority: **23.11.88 US 275265**

(43) Date of publication of application: **30.05.90 Bulletin 90/22**

(84) Designated Contracting States: **BE DE FR GB NL**

(88) Date of deferred publication of the search report: **14.08.91 Bulletin 91/33**

(71) Applicant: **Terrell, Jamie B.**
1916 Christopher Drive
Everman Texas 76140(US)

(72) Inventor: **Terrell, Jamie B.**
1916 Christopher Drive
Everman Texas 76140(US)

(74) Representative: **UEXKÜLL & STOLBERG**
Patentanwälte
Beselerstrasse 4
W-2000 Hamburg 52(DE)

(54) Downhole chemical cutting tool.

(57) A downhole chemical cutting tool having an anchoring system employing interchangeable slip arrays (38) of progressively larger outside diameters that can be used economically to adjust the range of the anchoring system. The range can be further adjusted by utilizing interchangeable slip expansion mandrels (44). This anchoring system both anchors and centralizes the chemical cutting tool. The cutting tool includes a slip shaft (32) that provides fluid communication between the propellant section (24) and chemical section (26), thence to the slip piston (36) that receives the interchangeable slip arrays (38). The slip shaft and slip piston are threadedly connected to a set coiled tension spring (34). Interchangeable slip expansion mandrels (44) connected to the slip shaft (32) below the slip arrays are constructed with ball bearings (44a) on the surface that receives the slip arrays expanding the slip segments into a gripping engagement an usually large angle as the slip piston is actuated by the application of fluid pressure during the cutting operation. The interchangeable slips are configured so that th gripping teeth (38k,j,i,h) will simultaneously engag the internal surface (110) of the wellbore pipe being cut. During the cutting operation th application of fluid pressure activates the slip assembly and discharges th chemical cutting fluid from the chemical section into the fluid jet section of the tool at high temperature and velocity. After the release of fluid pressure the slip assembly reliably releases the tool due to the large angle of engagement of the slip segments.

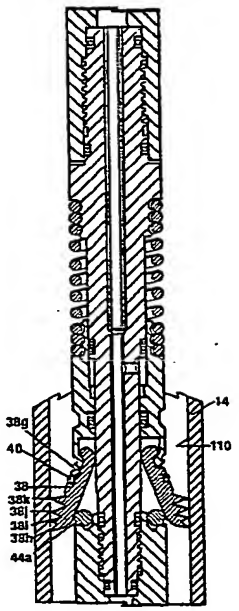

FIG. 4

EP 0 370 591 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 25 0092

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A,D	US-A-4 620 591 (TERRELL) * Abstract; figure 10 *	1,5,8,18	E 21 B 23/00 E 21 B 23/04 E 21 B 29/02 E 21 B 17/10
A,D	US-A-4 415 029 (PRATT) * Abstract; fig. *	1,5,8,18	
A,D	US-A-4 619 318 (TERRELL) * Abstract; fig. *	1,5,8,18	
A,D	US-A-4 345 646 (TERRELL) * Abstract; fig. *	1,5,8,18	
A,D	US-A-4 125 161 (CHAMMAS) * Abstract; fig. *	1,5,8,18	
A	DE-A-1 911 900 (LONGYEAR DIAMOND CORE DRILL SUPPLIERS) * Fig. *	1,5,8,18	
A	US-A-4 637 471 (SODERBERG) * Abstract; fig. *	1,5,8,18	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E 21 B

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	17 May 91	WEIAND T.

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
Y: particularly relevant if combined with another document of the same catagory
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention

E: earlier patent document, but published on, or after the filing date
D: document cited in the application
L: document cited for other reasons

&: member of the same patent family, corresponding document